SIEMENS

Data sheet 3RT2024-1AN20



power contactor, AC-3e/AC-3, 12 A, 5.5 kW / 400 V, 3-pole, 220 V AC, 50/60 Hz, auxiliary contacts: 1 NO + 1 NC, screw terminal, size: S0

product designation 3RT2 General technical data size of contactor S0 product extension • function module for communication No • auxiliary switch Yes power loss [W] for rated value of the current • at AC in hot operating state 0.9 W • at AC in hot operating state per pole 0.3 W • without load current share typical 2 W insulation voltage • of main circuit with degree of pollution 3 rated value 690 V • of auxiliary circuit with degree of pollution 3 rated value 690 V surge voltage resistance • of main circuit rated value 6 kV maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1 shock resistance at rectangular impulse • at AC 7,5g / 5 ms, 4,7g / 10 ms mechanical service life (operating cycles)
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power loss [W] for rated value of the current • at AC in hot operating state 0.9 W • at AC in hot operating state per pole 0.3 W • without load current share typical 2 W insulation voltage • of main circuit with degree of pollution 3 rated value 690 V • of auxiliary circuit with degree of pollution 3 rated value 690 V surge voltage resistance • of main circuit rated value 6 kV • of auxiliary circuit rated value 6 kV • of auxiliary circuit rated value 7 kV maximum permissible voltage for protective separation between coil and main contacts according to EN 60947-1 shock resistance at rectangular impulse • at AC 7,5g / 5 ms, 4,7g / 10 ms shock resistance with sine pulse • at AC 11,8g / 5 ms, 7,4g / 10 ms
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coil and main contacts according to EN 60947-1 shock resistance at rectangular impulse • at AC shock resistance with sine pulse • at AC 11,8g / 5 ms, 7,4g / 10 ms
• at AC
shock resistance with sine pulse • at AC 11,8g / 5 ms, 7,4g / 10 ms
• at AC 11,8g / 5 ms, 7,4g / 10 ms
70 - 77 - 7
mechanical service life (operating cycles)
• of contactor typical 10 000 000
 of the contactor with added electronically optimized auxiliary switch block typical
• of the contactor with added auxiliary switch block typical 10 000 000
reference code according to IEC 81346-2 Q
Substance Prohibitance (Date) 10/01/2009
Ambient conditions
installation altitude at height above sea level maximum 2 000 m
ambient temperature
• during operation -25 +60 °C
• during storage -55 +80 °C
relative humidity minimum 10 %
relative humidity at 55 °C according to IEC 60068-2-30 95 % maximum
Main circuit
number of poles for main current circuit 3

number of NO contacts for main contacts	3
operating voltage	
• at AC-3 rated value maximum	690 V
at AC-3e rated value maximum	690 V
operational current	
 at AC-1 at 400 V at ambient temperature 40 °C rated 	40 A
value	
• at AC-1	
— up to 690 V at ambient temperature 40 °C rated	40 A
value	05.4
 up to 690 V at ambient temperature 60 °C rated value 	35 A
• at AC-3	
— at 400 V rated value	12 A
— at 500 V rated value	12 A
— at 690 V rated value	9 A
• at AC-3e	
— at 400 V rated value	12 A
— at 500 V rated value	12 A
	9 A
— at 690 V rated value	
at AC-4 at 400 V rated value at AC-5 aug to 600 V rated value	12.5 A
at AC-5a up to 690 V rated value	35.2 A
at AC-5b up to 400 V rated value	9.9 A
• at AC-6a	
— up to 230 V for current peak value n=20 rated value	11.4 A
— up to 400 V for current peak value n=20 rated value	11.4 A
 up to 500 V for current peak value n=20 rated value 	11.3 A
 up to 690 V for current peak value n=20 rated value 	9 A
• at AC-6a	
 up to 230 V for current peak value n=30 rated value 	7.6 A
 up to 400 V for current peak value n=30 rated value 	7.6 A
 up to 500 V for current peak value n=30 rated value 	7.6 A
 up to 690 V for current peak value n=30 rated value 	7.6 A
minimum cross-section in main circuit at maximum AC-1 rated value	10 mm ²
operational current for approx. 200000 operating cycles at	
AC-4	
• at 400 V rated value	5.5 A
• at 690 V rated value	5.5 A
operational current	
at 1 current path at DC-1	
— at 24 V rated value	35 A
— at 60 V rated value	20 A
— at 110 V rated value	4.5 A
— at 220 V rated value	1 A
— at 440 V rated value	0.4 A
— at 600 V rated value	0.25 A
with 2 current paths in series at DC-1	
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 110 V rated value — at 220 V rated value	5 A
— at 440 V rated value	1 A
— at 600 V rated value	0.8 A
with 3 current paths in series at DC-1	05.4
— at 24 V rated value	35 A
— at 60 V rated value	35 A
— at 110 V rated value	35 A
— at 220 V rated value	35 A
— at 440 V rated value	2.9 A
— at 600 V rated value	1.4 A
 at 1 current path at DC-3 at DC-5 	

— at 24 V rated value	20 A				
— at 60 V rated value	5 A				
— at 220 V rated value	1 A				
— at 440 V rated value	0.09 A				
— at 600 V rated value	0.06 A				
 with 2 current paths in series at DC-3 at DC-5 					
— at 24 V rated value	35 A				
— at 60 V rated value	35 A				
— at 110 V rated value	15 A				
— at 220 V rated value	3 A				
— at 440 V rated value	0.27 A				
— at 600 V rated value	0.16 A				
 with 3 current paths in series at DC-3 at DC-5 					
— at 24 V rated value	35 A				
— at 60 V rated value	35 A				
— at 110 V rated value	35 A				
— at 220 V rated value	10 A				
— at 440 V rated value	0.6 A				
— at 600 V rated value	0.6 A				
operating power	0.071				
at AC-3					
	3 MW				
— at 230 V rated value	3 kW				
— at 400 V rated value	5.5 kW				
— at 500 V rated value	5.5 kW				
— at 690 V rated value	7.5 kW				
• at AC-3e	0.134				
— at 230 V rated value	3 kW				
— at 400 V rated value	5.5 kW				
— at 500 V rated value	5.5 kW				
— at 690 V rated value	7.5 kW				
operating power for approx. 200000 operating cycles at AC-					
at 400 V rated value	2.6 kW				
at 690 V rated value	4.6 kW				
	4.0 KVV				
operating apparent power at AC-6a	4.5.10/0				
up to 230 V for current peak value n=20 rated value	4.5 kVA				
up to 400 V for current peak value n=20 rated value	7.8 kVA				
• up to 500 V for current peak value n=20 rated value	9.8 kVA				
• up to 690 V for current peak value n=20 rated value	10.7 kVA				
operating apparent power at AC-6a	0.11/4				
• up to 230 V for current peak value n=30 rated value	3 kVA				
• up to 400 V for current peak value n=30 rated value	5.2 kVA				
up to 500 V for current peak value n=30 rated value	6.5 kVA				
up to 690 V for current peak value n=30 rated value	9 kVA				
short-time withstand current in cold operating state up to 40 °C					
Iimited to 1 s switching at zero current maximum	210 A; Use minimum cross-section acc. to AC-1 rated value				
<u> </u>					
limited to 5 s switching at zero current maximum limited to 10 s switching at zero current maximum	210 A; Use minimum cross-section acc. to AC-1 rated value				
limited to 10 s switching at zero current maximum limited to 20 s switching at zero current maximum	170 A; Use minimum cross-section acc. to AC-1 rated value				
limited to 30 s switching at zero current maximum limited to 60 s switching at zero current maximum	126 A; Use minimum cross-section acc. to AC-1 rated value				
Iimited to 60 s switching at zero current maximum	105 A; Use minimum cross-section acc. to AC-1 rated value				
no-load switching frequency	5 000 1/b				
• at AC	5 000 1/h				
operating frequency	4 000 4/5				
• at AC-1 maximum	1 000 1/h				
• at AC-2 maximum	1 000 1/h				
• at AC-3 maximum	1 000 1/h				
• at AC-3e maximum	1 000 1/h				
at AC-4 maximum	300 1/h				
Control circuit/ Control					
type of voltage of the control supply voltage	AC				

control supply voltage at AC					
control supply voltage at AC • at 50 Hz rated value	220 V				
at 50 Hz rated value at 60 Hz rated value					
operating range factor control supply voltage rated value of	220 V				
magnet coil at AC					
• at 50 Hz	0.8 1.1				
• at 60 Hz	0.85 1.1				
apparent pick-up power of magnet coil at AC					
● at 50 Hz	68 VA				
• at 60 Hz	67 VA				
inductive power factor with closing power of the coil					
• at 50 Hz	0.72				
• at 60 Hz	0.74				
apparent holding power of magnet coil at AC					
● at 50 Hz	7.9 VA				
• at 60 Hz	6.5 VA				
inductive power factor with the holding power of the coil					
● at 50 Hz	0.25				
• at 60 Hz	0.28				
closing delay					
• at AC	8 40 ms				
opening delay					
• at AC	4 16 ms				
arcing time	10 10 ms				
control version of the switch operating mechanism	Standard A1 - A2				
Auxiliary circuit					
number of NC contacts for auxiliary contacts instantaneous contact	1				
number of NO contacts for auxiliary contacts instantaneous contact	1				
operational current at AC-12 maximum	10 A				
operational current at AC-15					
• at 230 V rated value	10 A				
• at 400 V rated value	3 A				
• at 500 V rated value	2 A				
at 690 V rated value	1 A				
operational current at DC-12					
at 24 V rated value	10 A				
at 48 V rated value	6 A				
at 60 V rated value	6 A				
• at 110 V rated value	3 A				
• at 125 V rated value	2 A				
• at 220 V rated value	1 A				
at 600 V rated value	0.15 A				
operational current at DC-13					
at 24 V rated value	10 A				
• at 48 V rated value	2 A				
at 60 V rated value	2 A				
• at 110 V rated value	1 A				
• at 125 V rated value	0.9 A				
at 220 V rated value	0.3 A				
at 600 V rated value	0.1 A				
contact reliability of auxiliary contacts	1 faulty switching per 100 million (17 V, 1 mA)				
UL/CSA ratings					
full-load current (FLA) for 3-phase AC motor					
• at 480 V rated value	11 A				
at 600 V rated value	11 A				
yielded mechanical performance [hp]					
 for single-phase AC motor 					
— at 110/120 V rated value	1 hp				
— at 230 V rated value	2 hp				

 for 3-phase AC motor 			
— at 200/208 V rated value	3 hp		
 — at 220/230 V rated value 	3 hp		
 — at 460/480 V rated value 	7.5 hp		
— at 575/600 V rated value	10 hp		
contact rating of auxiliary contacts according to UL	A600 / P600		
Short-circuit protection			
design of the fuse link			
 for short-circuit protection of the main circuit 			
 — with type of coordination 1 required 	gG: 63A (690V,100kA), aM: 32A (690V,100kA), BS88: 63A (415V,80kA)		
 — with type of assignment 2 required 	gG: 25A (690V,100kA), aM: 20A (690V,100kA), BS88: 25A (415V,80kA)		
 for short-circuit protection of the auxiliary switch required 	gG: 10 A (500 V, 1 kA)		
Installation/ mounting/ dimensions			
mounting position	+/-180° rotation possible on vertical mounting surface; can be tilted forward and backward by +/- 22.5° on vertical mounting surface		
fastening method	screw and snap-on mounting onto 35 mm DIN rail according to DIN EN 60715		
side-by-side mounting	Yes		
height	85 mm		
width	45 mm		
depth	97 mm		
required spacing			
 with side-by-side mounting 			
— forwards	10 mm		
— upwards	10 mm		
— downwards	10 mm		
— at the side	0 mm		
 for grounded parts 			
— forwards	10 mm		
— upwards	10 mm		
— at the side	6 mm		
— downwards	10 mm		
for live parts			
— forwards	10 mm		
— upwards	10 mm		
— downwards	10 mm		
— at the side	6 mm		
Connections/ Terminals			
type of electrical connection			
for main current circuit	screw-type terminals		
 for auxiliary and control circuit 	screw-type terminals		
 at contactor for auxiliary contacts 	Screw-type terminals		
of magnet coil	Screw-type terminals		
type of connectable conductor cross-sections for main contacts			
• solid	2x (1 2.5 mm²), 2x (2.5 10 mm²)		
• solid or stranded	2x (1 2.5 mm²), 2x (2.5 10 mm²)		
finely stranded with core end processing	2x (1 2.5 mm²), 2x (2.5 6 mm²), 1x 10 mm²		
connectable conductor cross-section for main contacts			
• solid	1 10 mm²		
• stranded	1 10 mm²		
finely stranded with core end processing	1 10 mm²		
connectable conductor cross-section for auxiliary contacts			
 solid or stranded 	0.5 2.5 mm²		
finely stranded with core end processing	0.5 2.5 mm²		
type of connectable conductor cross-sections			
for auxiliary contacts			
— solid or stranded	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)		
 finely stranded with core end processing 	2x (0.5 1.5 mm²), 2x (0.75 2.5 mm²)		
for AWG cables for auxiliary contacts	2x (20 16), 2x (18 14)		
AWG number as coded connectable conductor cross section			
• for main contacts	16 8		

• for auxiliary contacts	20 14		
Safety related data			
product function			
mirror contact according to IEC 60947-4-1	Yes		
suitability for use safety-related switching OFF	Yes		
B10 value with high demand rate according to SN 31920	450 000		
proportion of dangerous failures			
 with low demand rate according to SN 31920 	40 %		
 with high demand rate according to SN 31920 	73 %		
failure rate [FIT] with low demand rate according to SN 31920	100 FIT		
T1 value for proof test interval or service life according to IEC 61508	20 a		
protection class IP on the front according to IEC 60529	IP20		
touch protection on the front according to IEC 60529	finger-safe, for vertical contact from the front		

Certificates/ approvals

General Product Approval





Confirmation



<u>KC</u>





Type Examination Certificate





Type Test Certificates/Test Report

Special Test Certificate

Marine / Shipping













other	Railway	Environment
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Confirmation



Confirmation

Vibration and Shock

Environmental Confirmations

Further information

Siemens has decided to exit the Russian market (see here).

https://press.siemens.com/global/en/pressrelease/siemens-wind-down-russian-business

Siemens is working on the renewal of the current EAC certificates.

Please contact your local Siemens office on the status of validity of the EAC certification if you intend to import or offer to supply these products to an EAC relevant market (other than the sanctioned EAEU member states Russia or Belarus).

Information on the packaging

https://support.industry.siemens.com/cs/ww/en/view/109813875

Information- and Downloadcenter (Catalogs, Brochures,...)

https://www.siemens.com/ic10

Industry Mall (Online ordering system)

https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RT2024-1AN20

Cax online generator

http://support.automation.siemens.com/WW/CAXorder/default.aspx?lang=en&mlfb=3RT2024-1AN20

 $Service \& Support \ (Manuals, \ Certificates, \ Characteristics, \ FAQs, ...)$

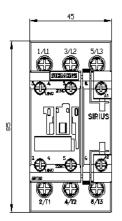
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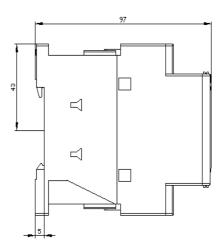
Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...)

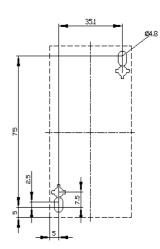
http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RT2024-1AN20&lang=en

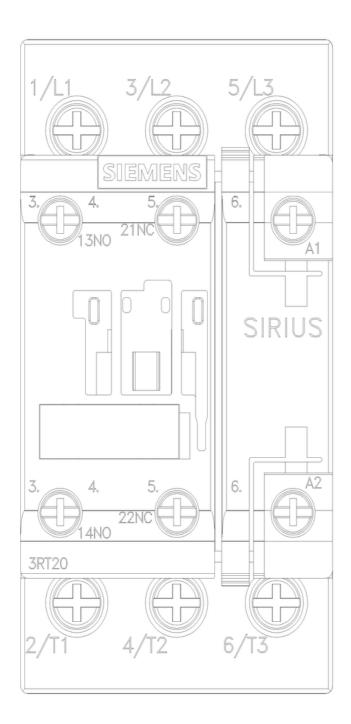
Characteristic: Tripping characteristics, I²t, Let-through current https://support.industry.siemens.com/cs/ww/en/ps/3RT2024-1AN20/c

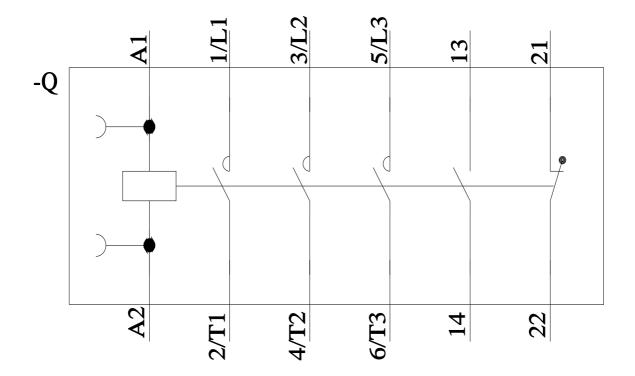
Further characteristics (e.g. electrical endurance, switching frequency)











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